MICROPLASTIC DISTRIBUTION ALONG SPANISH MEDITERRANEAN COAST AND *MAR MENOR LAGOON*

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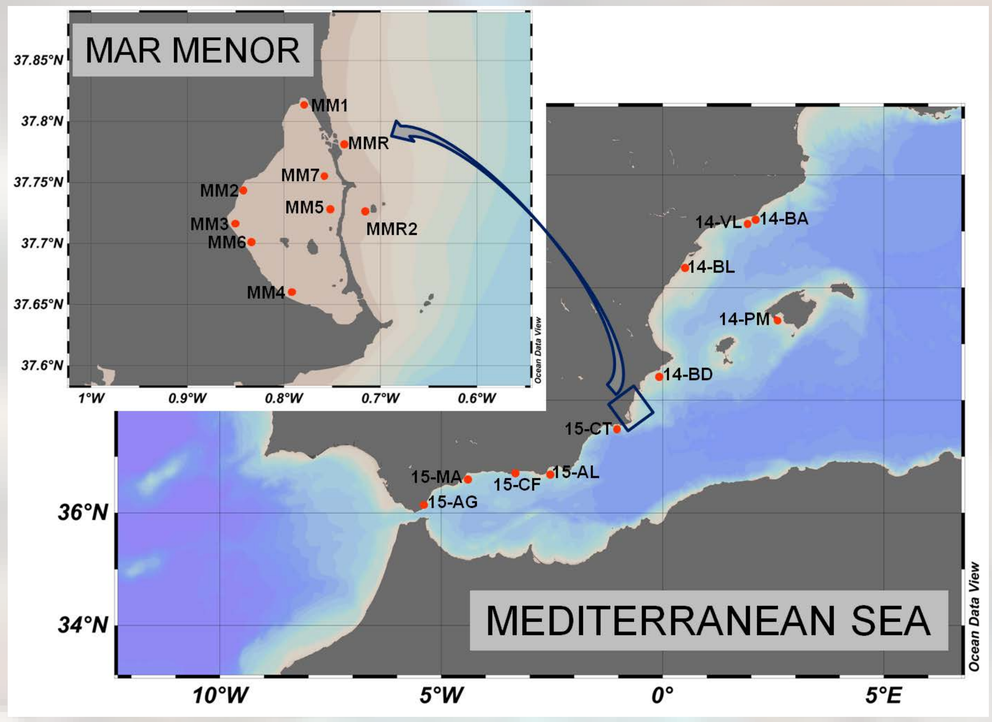
INTRODUCTION:

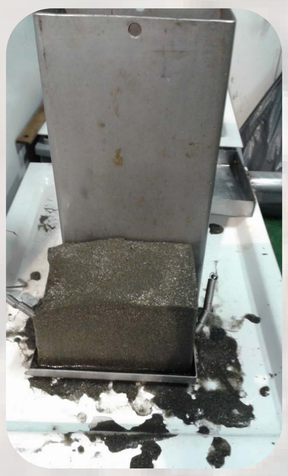
The extensive use of plastics and their applications in agriculture, industry or packaging among other activities, favors their presence in all environmental compartments. Depending on the nature of the predominant polymer its permanence, distribution and effects on the environment may be different.

Plastics may be fragmented into tiny pieces. Microplastics (MPs) are defined as particles less than 5 mm (Arthur et al., 2009) which concentration has grown exponentially in recent years (Roberts, 2012), especially in coastal waters and sediments (Thompson et al., 2004).

The **aim** of this study is to characterize the distribution of MPs along the Mediterranean coast with special focus on Mar Menor lagoon, a hypersaline coastal lagoon (42-47 psu) located in SE Spain, with a mean depth of 4.5 m (maximum depth 6.6 m).



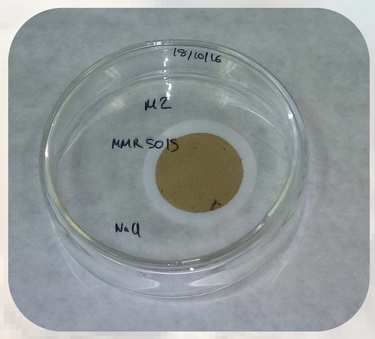
WORKING PROCEDURE:



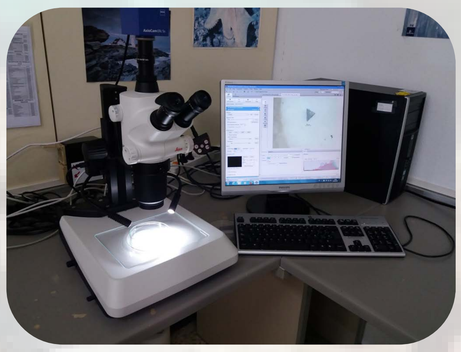
Sediments were collected with a Box corer.

First layer were sampled (<2cm)

Sediment was resuspended in satured NaCl and filtered under vacuum

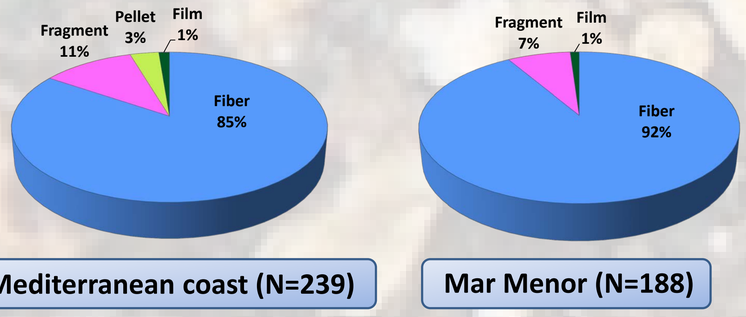


Samples were retained on glass microfiber filters



Stereoscopic microscope was used to identify microplastics

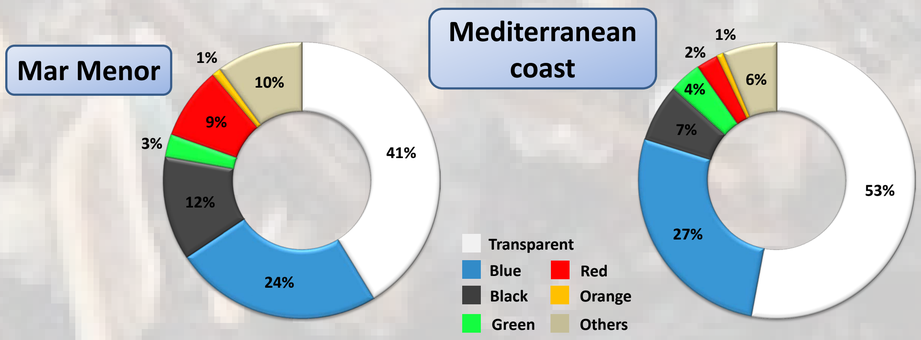
MPs TYPE:



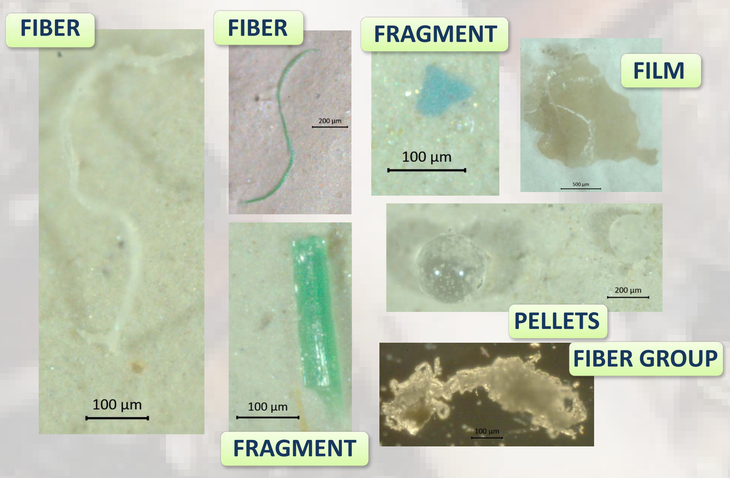
Mediterranean coast (N=239)

Mar Menor (N=188)

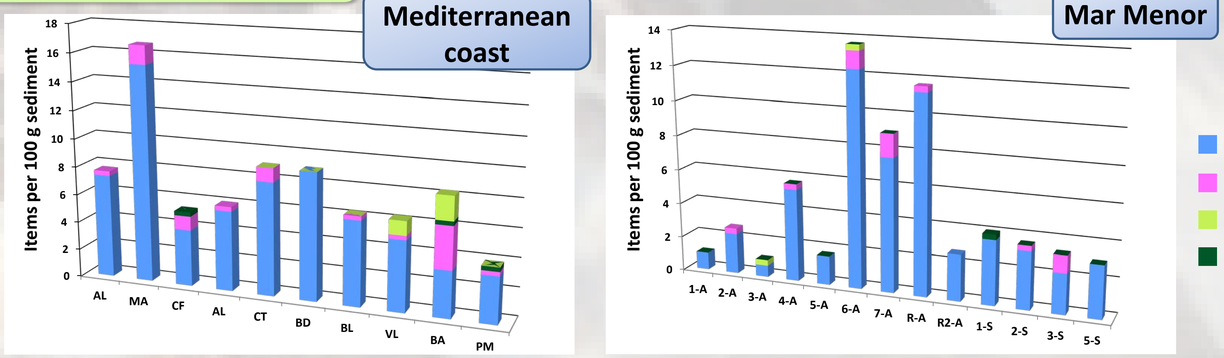
MPs COLOR:



MPs OBSERVED:



MPs DISTRIBUTION:



- The highest MP concentration along the Mediterranean coast was found in front of Malaga ($\bar{X}$=17±9) whilst Palma de Mallorca ($\bar{X}$=4±2) presented the lowest concentration in sediments.
- On the other hand, in Mar Menor lagoon, the highest MP concentration in sediments was observed in autumn, in particular in station MM6 ($\bar{X}$=14±11) while the lowest concentration ($\bar{X}$=1±0) was observed in station MM3.

CONCLUSIONS:

- This study confirms the widespread occurrence of MPs in the Mediterranean Sea.
- MPs were found in all analyzed sediments samples: 239 items were found along the Spanish Mediterranean coast and 147 and 41 items in the Mar Menor in autumn and spring, respectively.
- Fibers, i.e. elongated filaments, were the dominating type of identified MPs particles (up to 85%), followed by plastic fragments, pellets and films.
- Fiber length in Mar Menor varied between 114 and 4925 µm ($\bar{X}$ = 1356 ± 961); in Mediterranean coast minimum length was 117 µm and maximum one 4933 µm ($\bar{X}$ = 1598 ± 1067)
- Transparent and blue colors were the predominant ones in all samples, up to 65% and 80% in Mar Menor lagoon and Mediterranean coast respectively. Other colors, e.g. black, red, green, orange, pink and violet, were also identified.
- Further data collection is required in order to establish accumulation trends of MPs in the coastal areas.

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Thompson, R.C., Olsen, Y., Michell, R.P., Davis, A., Rowland, S.J., John, A.W.C., McGonigle, D., in Russel, A.E. 2004. Science, vol. 304, pp. 888

ACKNOWLEDGEMENTS

This research has been supported by the Spanish Inter-Ministerial Science and Technology Commission "IMPACTA" project (CICYT, CTM2013-48194-C3-1-R) and by the European Union through the European Regional Development Fund (ERDF).

CENTRO OCEANOGRÁFICO DE VIGO 1917·2017